Restoring functions and aesthetics of a bruxer patient with severely worn-out dentition by full mouth reclamation

DR. ANANT AGARWAL[1], DR. AMRIT TANDAN[2], DR. SHIKHA GUPTA[3], DR. INDU YADAV[4], DR. CHARU RUKHAYA[5], DR. RAKHI RAVEENDRAN[6]

[1]SENIOR LECTURER, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

[2]PROFESSOR, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

[3]READER, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

[4]SENIOR LECTURER, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

[5]PG STUDENT, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

[6]PG STUDENT, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.

Abstract

Full mouth Rehabilitation (FMR) not only restores the smile and function but also focuses on holistic care of the patient directly or indirectly by boosting the morale and overall quality of life of the person. FMR is practiced by prosthodontist based on their knowledge, practical skills and numerous philosophies of occlusal rehabilitation. The present case report describes the smile designing, overall restoration of function and resultant psychological satisfaction.

Keywords: Full mouth rehabilitation, worn out dentition, bruxism, off and on technique, inter- occlusal records, fixed crowns, mouth reconstruction.

INTRODUCTION

Restoration of aesthetics and function of severely worn-off teeth has been a demanding task.[1] Tooth wear is a progressive, multifactorial affair involving the loss of enamel and dentine which can affect the survival of tooth as well as the oral health of the affected people.[2] Gradual wear of the occlusal surfaces of teeth is a natural process which occurs throughout the lifetime of an individual compensated by tooth eruption and alveolar bone growth. However, excessive tooth wear can result in occlusal disharmony, impaired masticatory function, pulpal injury and esthetic deformity. Tooth wear is classified as attrition, abrasion, and erosion, out of which attrition leads to alteration of the vertical dimension of occlusion (VDO).[3] Management of tooth wear is a demanding task requiring extensive prosthetic rehabilitation.

Full mouth rehabilitation (FMR) is a challenging job that enhances the aesthetics and masticatory efficiency.[4] Proper assessment of occlusal vertical dimension, interocclusal rest space, and centric relation records are the key aspects for successful treatment.[5]

The current case report describes the full mouth rehabilitation of a patient with attrition which was done through proper designing of treatment plan, with the aim to restore patient's aesthetics and function.

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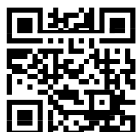

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Address for correspondence: DR. ANANT AGARWAL
SENIOR LECTURER, DEPARTMENT OF PROSTHODONTICS BBDCODS, LUCKNOW.
Email: agarwal.anant99@gmail.com

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Case report:

A 62-year-old male patient reported to the department of prosthodontics and crown & bridge, with the complaint of hypersensitivity too cold in upper and lower back teeth in the last 6 months. There was no significant medical history. The extraoral examination did not reveal facial asymmetry but has bilateral pronounced hyperactivity of masseter muscle. No history of temporomandibular dysfunction was found. Intra-oral examination revealed generalized attrition (Figure1). Further radiographic examination revealed, absence of abnormality in the pulp chambers and pulp horns of the teeth and absence of peri-apical radiolucency or radio-opacity (Figure 2).

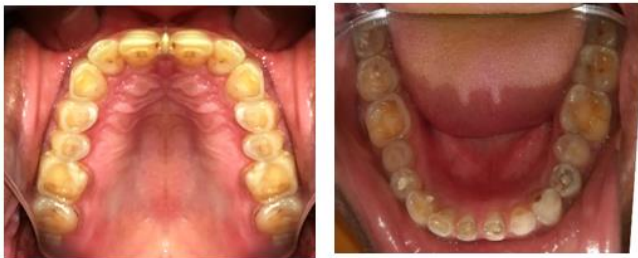

FIGURE 1: INTRAORAL IMAGES

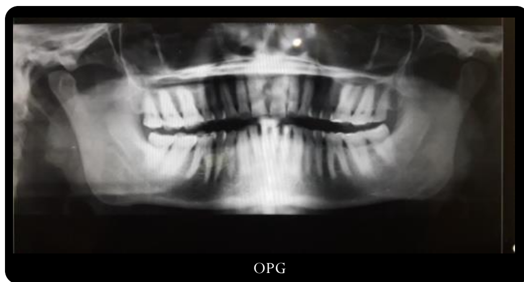

FIGURE 2: DIAGNOSTIC X- RAY

The treatment options were explained to the patient and full arch rehabilitation for both the maxillary and mandibular arches through full mouth metal ceramic crowns were opted for oral rehabilitation.

Firstly, patient bruxism habit was intercepted by using, off- and -on intentional grinding technique for 2 weeks.6

Oral prophylaxis was done, and diagnostic casts were obtained from the diagnostic impression's using alginate. Face bow (Hanau Spring Bow face bow) transfer was made on a semi-adjustable articulator (Hanau™ Wide-Vue; Whip Mix Corporation, Louisville, USA) and maxillary cast was mounted after zeroing. The mandibular cast was then mounted using centric interocclusal records using Alu wax.

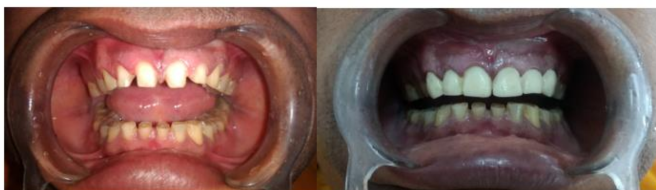

FIGURE 3: TOOTH PREPARATION IN MAILLARY ANTERIORS AND TEMPORIZATION

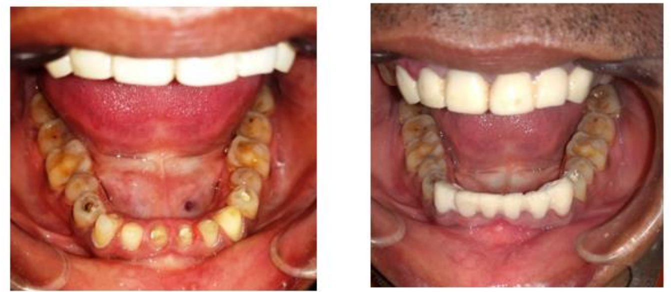

FIGURE 4: TOOTH PREPARATION IN MANDIBULAR ANTERIORS AND TEMPORIZATION

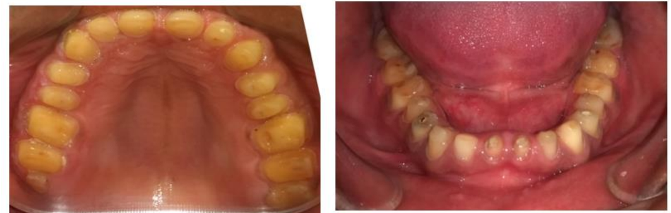

FIGURE 5: TOOTH PREPARATION IN MAXILLARY AND MANDIBULAR POSTERIORS

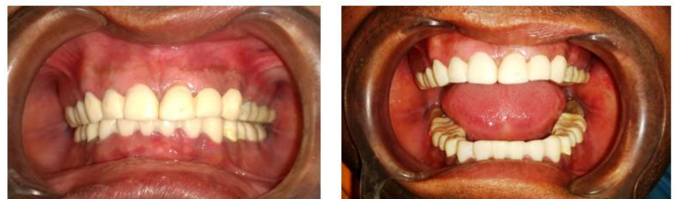

FIGURE 6: TEMPORIZATION IN MAXIILARY AND MANDIBULAR TEETH

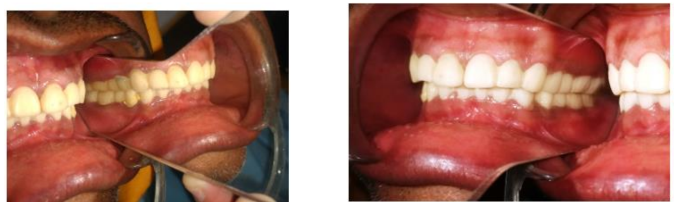

FIGURE 7: SIDE VIEW AFTER TEMPORIZATION

Diagnostic mock-up was done on maxillary and mandibular cast and putty index were made separately. The preparation of maxillary and mandibular anterior teeth was done followed by temporization using putty index respectively1 (figure 3, 4). After the preparation of anterior teeth, preparation of posterior teeth on right and left segments were done with temporization using putty index (figure 5, 6, 7). After temporization, patient was recalled, and occlusal balancing was done to eliminate interferences and patient was instructed to use the temporary restorations for 8 weeks. Final impression for maxillary and mandibular teeth were made by dual step reline technique using putty and light body addition silicon and final cast were obtained. The die cutting and ditching of cast was done (Figure 8).

FIGURE 8: MASTER CAST AFTER FINAL IMPRESSION

A fresh facebow transfer was done after preparation, to mount final maxillary cast.

A new Centric relation record was made (Ramitac Polyether Bite Registration Paste) by removing only posterior provisional restorations on one side at a time (Figure 9). Using this centric record, mandibular cast were mounted. Wax patterns were made on individual teeth (Figure 10) and casted, metal coping try -in was done in patients mouth to check the marginal fit (Figure 11).

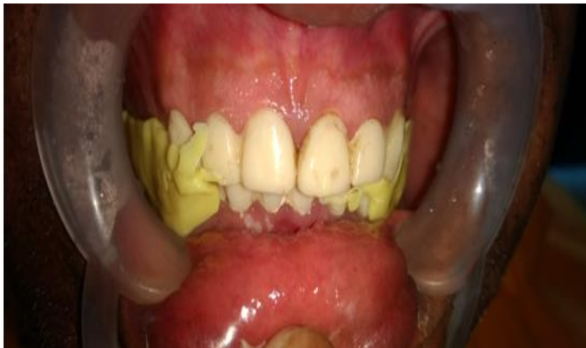

FIGURE 9: INTEROCCLUSAL RECORD IN CENTRIC OCCLUSION

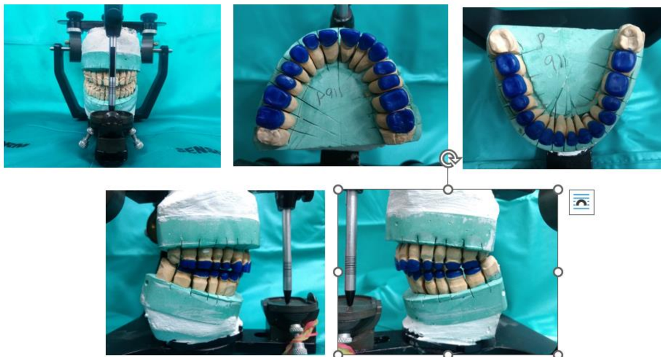

FIGURE 10: WAX PATTERN

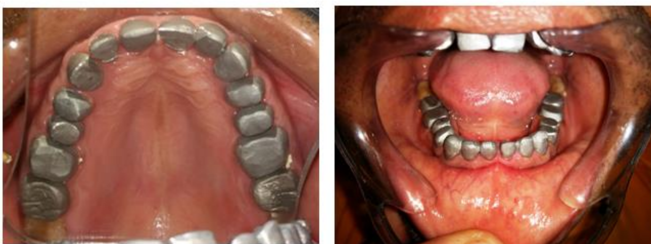

FIGURE11: METAL COPING TRY- IN PATIENT MOUTH

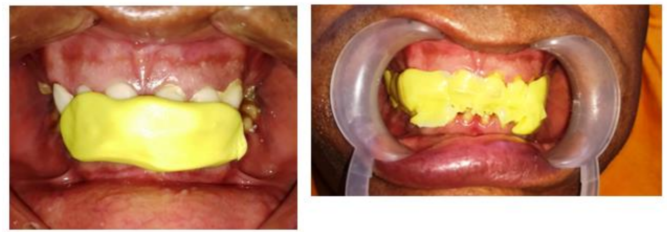

FIGURE 12: INTEROCCLUSAL RECORD IN PROTRUSIVE

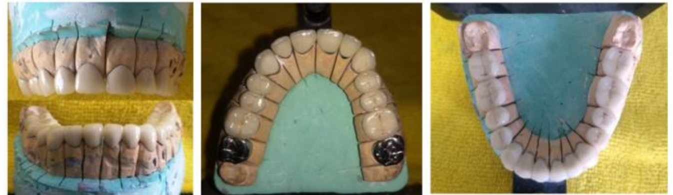

FIGURE 13: PFM CROWNS ON ARTICULATOR

Protrusive inter-occlusal records were made without removing anterior temporary, asking the patient to protrude till an edge-to-edge relationship of upper and lower anterior teeth is achieved, a jig is made using addition silicon putty and bite registration paste is injected in posterior region bilaterally (Figure 12). By using this record, the articulator was programmed accordingly. Porcelain was then layered on the metal copings and porcelain fused to metal crowns were obtained (Figure 13).

Centric and eccentric relation were checked on programmed articulator, a group function occlusal scheme was provided bilaterally.

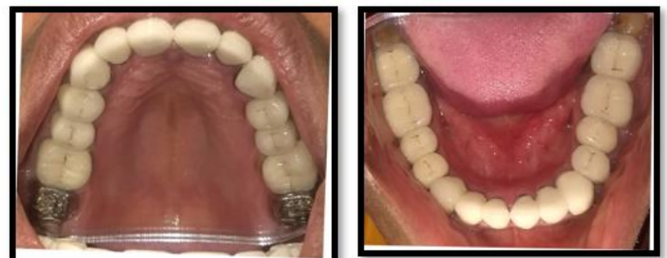

FIGURE14: PFM CROWNS AFTER CEMENTATION

The crowns were placed in patient’s mouth and after checking and establishment of proper occlusal relationship they were cemented individually (Figure14). First on maxillary and mandibular anterior region than in posterior region. Patient follow-up was done at regular interval i.e., 24 hours, 48 hours, 72 hours, after 1 week, 2nd week, 1st month, 2nd month, 6 months and 1 year. Patient had healthy gingiva, no discomfort as noted and TMJ was healthy.

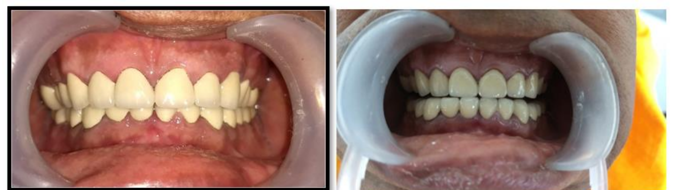

FIGURE 15: OCCLUSION

FIGURE 16: PATIENT AFTER SUCCESSFUL TREATMENT

Discussion:

Recreation of perfect occlusion from worn out dentition has always been a challenging job for a prosthodontist, especially when it is associated with habit like bruxism, to achieve adequate and harmonious stomatognathic functions, maintenance of patients' oral health and esthetics.[5]

Occurrence of occlusal interferences due to attrition leads to development of habit like bruxism which is a built in mechanical protective response for self- adjusting to that occlusal prematurity. Also known as "Karolyi effect' or the more common term "Bruxism'[6,7]. Off- and -On intentional grinding technique was used to eliminate the habit. It is a psychological approach based on the concept that all habits are learned and so can be unlearned or relearned.6 Occlusal disharmony may be corrected by reduction of muscle tone and harmonious integration of muscle action.[8]

Turner et al.9 gave a classification of severe wear patients into three categories: Category 1: Excessive wear with loss of occlusal vertical dimension. Category 2: Excessive wear without loss of occlusal vertical dimension but with space available. Category 3: Excessive wear without loss of occlusal vertical dimension but with limited space.

Raise in VDO it leads to downward movement of teeth leads to excessive stress on periodontal ligament and instability of occlusion sometimes this depression leads to temporomandibular problems. Jaw to jaw relationship is maintained in dentate patient by Continuous formation and addition of cementum and formation of alveolar process passively lifelong due of wear of teeth surfaces. The original VDO is maintained by this process even teeth wear to gum line.[6]

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